

# A New Middle Jurassic Bivalve Genus, *Agrawalimya*, from Kachchh (Gujarat), India

BY

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(1 Plate; 1 Text figure)

## INTRODUCTION

THE KACHCHH JURASSIC bivalve fauna is well known for its diversity and abundance. More than 35 families are known so far; many of them have been discovered only during the last decade by the members of the Banaras Hindu University team. Some families are very abundantly represented, while others are poorly represented. Pholadomyidae Gray is one of these groups. This family was initially known only by a few species of *Pholadomya* G. B. Sowerby. Later several other genera of this family were found.

The present genus has been created for an oblong, compressed and gaping bivalve with a peculiar shell surface and ornamentation found in the Bathonian-Callovian (Middle Jurassic) rocks of Pachchham Island, Kachchh district (Gujarat), India. In the type locality it occurs in strata which have yielded the Bathonian ammonites *Gracilisphinctes* Buckman, *Bullatimorphites* Buckman, and *Micromphalites* Buckman, and also in the younger beds yielding *Macrocephalites* Zittel. This genus does not agree with any of the known Jurassic bivalve genera. Unfortunately, the hinge and internal features are not exposed on any of the specimens in the present collection. It is, therefore, difficult to ascertain the true biological affinities of this taxon. However, it has some similarities in external features with *Girardotia* de Loriol, discussed later; for this reason it has been assigned to the family Pholadomyidae.

## Systematic Palaeontology

CLASS	- BIVALVIA Linnaeus, 1758
SUBCLASS	- ANOMALODESMATA Dall, 1889
ORDER	- PHOLADOMYOIDA Newell, 1965
SUPERFAMILY	- PANDORACEA Rafinesque, 1815
FAMILY	- PHOLADOMYIDAE Gray, 1847
Genus	- <i>Agrawalimya</i> gen. nov.

**Etymology:** The genus has been named for Professor Dr. Agrawal of the Banaras Hindu University, an eminent Palaeontologist and leader of the Banaras Hindu University team investigating the Jurassic fauna of Kachchh.

**Type species:** *Agrawalimya pseudosulcata* spec. nov., Bathonian-Callovian, Pachchham Island, Kachchh (Gujarat), India.

**Generic Diagnosis:** Shell equivalve, longitudinally sub-elliptical, appreciably inequilateral, moderately inflated, and with narrow anterior and broad posterior gape; umbones compressed, angular and slightly prosogyrous; a faint sulcus with asymmetrically inclined walls extends from the mid umbo to a point just anterior to the middle of the ventral margin; shell surface anterior to the sulcus

at a higher level than that posterior to it; ornamentation consisting of concentric ribs, stronger on the anterior and posterior parts but very faint in the middle; ligament external, lunule faint; escutcheon absent.

**Remarks:** From the morphologic characters noted above, it is evident that the genus cannot be conveniently referred to any of the known families. Its internal features, like those of *Girardotia* de Loriol (1903: 133), are unknown, and thus do not help in a familial assignment. *Girardotia*, a genus referred to the family Pholadomyidae (in MOORE *et al.*: N827) has a comparable shell outline and few external surface features. However, the genus differs from *Agrawalimya* in having unequal valves, radial ornamentation, an uniformly curved surface and deep narrow groove with symmetrically inclined walls meeting the ventral margin posteriorly. The inequivalved nature and presence of the radial groove are characters which do not fit those of the family Pholadomyidae. However, following COX & NEWELL (in MOORE *et al.*, 1969: N832), the present authors are also referring this new genus to that family, though not very confidently.

*Agrawalimya pseudosulcata* Singh, Jaitly & Pandey,  
spec. nov.

(Figures 1 to 3, 4)

**Etymology:** The specific name refers to the sulcus-like depression formed by the depressed groove on the shell surface.

**Diagnosis:** As for the genus.

**Material:** Five bivalved specimens and one left valve adhering to a shell of *Macrocephalites* (*Macrocephalites*) *formosus* (J. de C. Sowerby).

**Repository:** Palaeontological laboratory, Department of Geology, Banaras Hindu University, Varanasi 221005, India.

**Occurrence:** Bathonian – N of Sadhara (Gora Dongar) and S of Pachmai Pir (Kala Dongar); Callovian – NNW of Sadhara and S of Juna (Gora Dongar).

**Description:** Shell equivalve, appreciably inequilateral, moderately inflated, longitudinally subelliptical, gradually widening posteriorly and with a narrow anterior but broad posterior gape. Umbones obtusely angular, compressed, only slightly dorsal to hinge, feebly prosogyrous and situated at about the anterior third of the shell. Lunule faint and shallow, escutcheon absent. Antero-dorsal margin almost straight, meeting the strongly convex anterior margin in a broad curve; postero-dorsal margin long, gently convex, meeting the truncated posterior end in an obtuse angle, ventral margin straight to slightly convex. A pair of diagonal ridges diverge from the umbo at an angle of about 90°; the posterior one, meeting the postero-ventral end, is prominent throughout, obtusely angular and marks the region of maximum shell inflation; the anterior one is broadly rounded in the dorsal half but flattens ventrally and fades out before reaching the antero-ventral end of the shell. A sulcus-like, gradually widening radial depression, with steep anterior flank and very gently sloping posterior flank, extends from the umbo to a point just anterior to the middle of the ventral margin. This depression is bordered anteriorly by a sharp but low radial riblet in the umbonal region, which, however, fades out near the middle of the shell. The shell surface between the two diagonal ridges is almost flat but divided into two unequal parts by the radial depression; the anterior part is smaller and at higher level, and steps down almost vertically in the depression so that the part posterior to it is at a lower level (Figure 4a, b, c). Surface ornamentation of evenly and widely spaced narrow concentric ribs, which are coarse and prominent over the anterior and posterior parts but very faint, almost obliterated, in the area between the posterior diagonal ridge and the radial depression. Radially arranged fine pustules, scarcely visible by naked eye, are present on the surface between anterior third of the shell length and the posterior diagonal ridge. Ligament

### Explanation of Figures 1 to 3

*Agrawalimya pseudosulcata* Singh, Jaitly & Pandey,  
gen. nov., spec. nov.

Figure 1: Holotype (PG/98/24); Callovian – S of Juna (Gora Dongar) a – left valve, exterior; b – right valve, exterior; c – dorsal view, slightly inclined towards right valve  
Figure 2: Paratype (PK/142/24); Bathonian – S of Pachmai Pir

(Kala Dongar) a – right valve, exterior ( $\times 1.02$ ); b – left valve, dorsal view ( $\times 1.02$ )

Figure 3: Paratype (PG/263/7); Bathonian – E of Kharivow (Gora Dongar) a – left valve, exterior; b – dorsal view

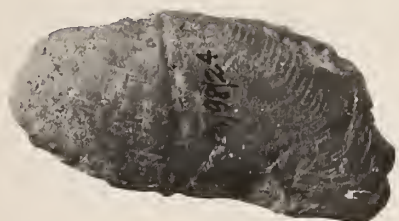


Figure 1a



Figure 1c

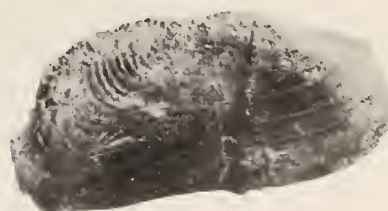


Figure 1b

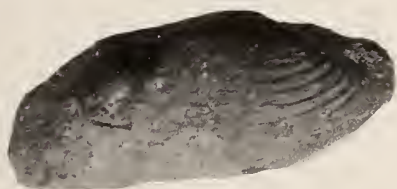


Figure 2a

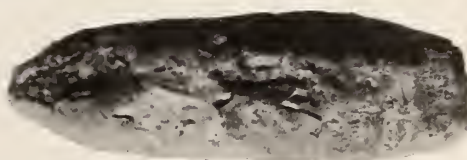


Figure 3b



Figure 2b

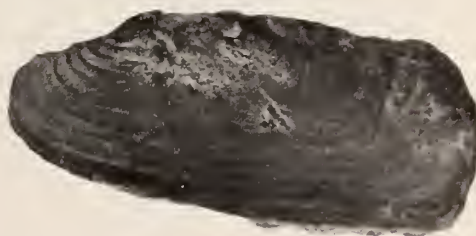


Figure 3a